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Status of the avifauna in the Szigetköz riparian area: an ornithological evaluation for nature conservation

by
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Abstract: The Szigetköz riparian area on the River Danube has become a key-area in Hungarian nature conservation. We summarized the ornithological research in the area, and compiled a list of 208 bird species. This list was compared with national (Hungarian Red Data Book, the lists of protected and strictly protected species) and international (Appendices of the Bern Convention, list of the Corine Biotope Project and the IUCN Red List) red data books and lists. Our conclusion is that the area harbour high species diversity, and the regionally most vulnerable species are the nationally most valuable ones. More active nature conservation is needed to preserve even the common species, relating to wetlands and water.
Key words: Szigetköz riparian area, bird species richness, conservation biological evaluation

Introduction

The governments of the People's Republic of Czechoslovakia and the People's Republic of Hungary decided to build a huge reservoir and dam system on the River Danube decades ago. Their aims were to build a hydroelectric power-station and to increase navigability in that river section. Although the construction works began already many years ago, nature conservation arguments were taken into consideration only in the last few years, when the Hungarian government cancelled the contract due to the acute threat of an ecological catastrophe.

The Szigetköz has a unique geomorphological character and landscape structure. It was the delta of the Danube at the Pannonian Lake which filled up in the Pliocene (Mike 1991). After the Pannonian Lake dried out, the former delta region became a so-called inland delta, where the riparian habitat is extremely wide and large, compared to other riparian habitats in Europe. Therefore it may be an extraordinary source of riparian landscape, habitat and wildlife diversity. In addition, it is known, that riparian habitats are of crucial importance for nature conservation, both as refugia and corridors for wildlife (Décamps 1993, Malanson 1993, Naiman *et al.* 1993).

The ornithological surveys by the staff of the Hungarian Natural History Museum started in the last decade. There were several ecological investigations (e.g. Moskát *et al.* 1993, Moskát & Fuisz in press, Waliczky *et al.* 1991, Waliczky 1992), conservation biological studies (Báldi & Moskát 1994, Báldi & Kisbenedek 1994), and many non-published reports (e.g. Mészáros & Báldi 1992), mainly data of the biological inventories.

The aim of this paper is to present the nature conservational aspects of the recent ornithological works in the Szigetköz, conducted by the staff of the Museum. The focus is on the occurrence of species, their status, and their value in the light of several national and international red lists. The presence of bird species of the Szigetköz on these red lists may reflect the ornithological uniqueness of the area. An other extended (in prep.) work on the

avifauna of the Szigetköz will review the status of all bird species, the estimated population size of rare species, and the densities of passerine species.

Study area and methods

The Szigetköz is located in Western Hungary (48°00'–47°40'N, 1715'–17°45'E) along the River Danube. It is composed of hundreds of small islands, surrounded with side-branches and dead arms. The Szigetköz is heavily managed by the forestry, at least 70% of the original forests were replaced with poplar (*Populus* sp.) plantation. See Simon (1992) for a botanical review and the evaluation of the naturalness of the area.

The sources for the present evaluation were the published papers (Báldi & Kisbenedek 1994, Báldi & Moskát 1994, Waliczky 1992), unpublished reports (Mészáros & Báldi 1992), few records on rare species from our non-published observations, and mainly the extensive inventory conducted by one of us (A. Z.) in the breeding season of 1994. During this inventory the presence/absence of all bird species in 62 quadrats of 1km per 1km were mapped both in April and May in the flood area of the Danube in order to detect both early and late arrivals.

The status of the avifauna from a conservation biological point of view was analysed according to their representation on national (Hungarian Red Data Book, Rakonczay 1990) and international red lists (Appendices of the Bern Convention, list of the PHARE CORINE Biotopes Project and the IUCN Red list, Groombridge 1993).

To bring together the ecological and economical reality, we made a rough estimation of the monetary value of the area, based on the estimation of occurring individuals and their monetary value given in the 12/1993 (31st of March) departmental order by the head of the Ministry of Environmental and Regional Policy.

Results

Altogether 208 bird species were observed in the Szigetköz area based on various sources from the last few years (see Appendix). This represents 58% of the total Hungarian avifauna.

We evaluated the status of the observed bird species using several nature conservation lists. Thirty-eight of the observed species are listed in the Hungarian Red Data Book, which is 46% of the list. Fifty-seven percent of the protected, and 46% of the strictly protected species of Hungary occurred in the area. Twenty-two non protected species were also present in the Szigetköz, both the very abundant species e.g. the Tree Sparrow (*Passer montanus*) and Hooded Crow (*Corvus cornix*), and several game birds like the Bean Goose (*Anser fabalis*), Pheasant (*Phasianus colchicus*) and Grey Partridge (*Perdix perdix*), although these latter species are not common.

The Appendix II. of the Bern Convention contained 139, the Appendix III. contained 57 species, and 12 species were not included in the Bern Appendices from the observed species. The Species List of the CORINE Biotop Project listed 58 species, while 150 were missing from the list. Nine bird species occurre in Hungary from the IUCN Red List, from which 5 species were observed in the Szigetköz area.

It is possible to rank the species based on the number of red lists they are present. The 32 most valuable species (bold in the Appendix) represent different status: there are 10 breeding, 5 possible breeding, 1 wintering, 16 migrating and 6 vagrant species.

Báldi *et al.* (1995) recently ranked the Hungarian Amphibian, Reptile, Bird and Mammalian taxa according to their nature conservation priorities. They listed 269 bird species, which

included 207 species from the avifauna of the Szigetköz. The Barnacle Goose (*Branta leucopsis*) were not included in their analysis, because it is very rare in Hungary. The mean of the biological scores for all the bird species is 12.79 and 12.13 for those occurring in the Szigetköz. The average for the scores of the status of the Hungarian population is 6.22 for all species, and 6.21 for those observed in the Szigetköz region.

Discussion

The large riparian area of Szigetköz is suffering drastic changes due to the dam construction works of the Gabcikovo hydroelectric power-station. The decrease of the watertable is serious, estimated to be several meters below the pre-construction level. In addition, the forestry harvests all the remaining forest and plantations. Therefore we may state that the Szigetköz is an essentially modified landscape. Considering that there is only a single habitat type, the riparian habitat, with several plantation and forest types, the 208 species (58%) seems to be a very high representation of the Hungarian avifauna. Below we argue, that the Szigetköz has several other important ornithological features, which are worth to consider.

The Szigetköz harbour interesting aviafauna from a biogeographical point of view. The area of the two vicariant *Corvus* species (or subspecies, according to different systematics), the Carrion Crow (*C. corone*) and the Hooded Crow (*C. cornix*) overlap in this region. Several montan species occur in this plain area, like the Dunnock (*Prunella modularis*), Willow Tit (*Parus montanus*) and Treecreeper (*Certhia familiaris*). The Icterine Warbler (*Hippolais icterina*) has a more dense population than in other Hungarian areas. The Olivaceous Warbler (*H. pallida*) expanded its range in the last years mainly along rivers. It have bred already in the Szigetköz.

The extensive meanders, dead-branches and rivers provide good wintering area for many waterfowl and their raptors, like the White-tailed Eagle (*Haliaetus albicilla*). That is why the Szigetköz is proposed to be a Wetland of International Importance (i.e. a Ramsar site).

The status of the most valuable species indicate that the riparian habitats and river branches are very important both for breeding (15) and for migrating (16) species. There are 6 species from the 32, which were rare in the area, but their typical habitats are not the riparian ones.

The average of the scores for the Szigetköz species set from the ranking system of Báldi *et al.* (1995) showed that the rank of the species was not skewed, may be as a consequence of the large species number. They listed the most threatened 34 bird species for Hungary. From that list 23 (68%) species were observed in the Szigetköz. Since this is the latest and most comprehensive ranking system for vertebrates in Hungary, the fact, that more than two-third of the threatened bird species of the country occur in the Szigetköz reflects the high value of the area, and the need of more active nature conservation.

Knowing the possible dramatic changes in the area we may expect that many of the most valuable species are the most vulnerable as well. These are species which (1) do not tolerate human disturbance, like the raptors, the Great Bustard (*Otis tarda*) and Black Stork (*Ciconia nigra*); (2) require mature forests, like the Black Woodpecker (*Dryocopos martius*) and Middle Spotted Woodpecker (*Dendrocopos medius*); and (3) mainly those species requiring wetlands or riparian habitats like the Great White Egret (*Casmerodius albus*), Corncrake (*Crex crex*), Bluethroat (*Luscinia svecica*), etc. Therefore recent human activities in the Szigetköz and in the whole region highly threaten the most fragile species. Unless well-designed and financed

nature conservation management actions start, these species are expected to become extinct in the Szigetköz.

The extinction of wetland species has already begun. The inventory in 1994 showed, that the Sedge Warbler (*Acrocephalus schoenobaenus*), Reed Warbler (*A. scirpaceus*) and the Savi's Warbler (*Locustella luscinioides*) were almost totally absent from the Upper Szigetköz, while they were abundant in the lower parts. Contrary, the Little Ringed Plover (*Charadrius dubius*), which prefer gravel shores, is more frequent in the Upper Szigetköz, than in the lower parts.

A recent ornithological survey in the Slovakian part of the Danube (Országhová *et al.* 1994), where the watertable increased already (in spite of the tendency in the Hungarian parts), reported 100 species. This is a nested subset of our list, because they did not observe species, which were not registered by us. It will be interesting to compare the avifaunal changes in areas with decreasing and increasing watertable.

The monetary value of the whole Szigetköz area was also estimated on the basis of the avifauna. The number of individuals for all protected bird species were estimated and multiplied with their monetary value. This lead to a huge number: 1.5 billion forints (13 million US dollars). In addition, the other taxa, and other values like ecosystem functions (e.g. soil protection, water and air clearance) and aesthetical values made the construction work totally harmful even from an economical point of view. We strongly suggest to involve conservation biological evaluations into economical estimations.

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Appendix. List of observed bird species in the Szigetköz, Western Hungary. Bold indicates the 32 most valuable species (see methods). Status: B – breeding, M – migrating, W – wintering, V – vagrant, parantheses indicate that the breeding is only suspected, or not recently observed. HRB: asterix indicate that the species is listed in the Hungarian Red Data Book (Rakonczay 1990). Protection: P – protected, SP – strictly protected species. Bern: the species is listed in the II. (B2) or III. (B3) Appendix of the Bern Convention. Corine: asterix indicate that the species is listed in the species list of the PHARE CORINE Biotope Pproject. IUCN: asterix indicate that the species is listed in the IUCN Red List (Groombridge *et al.* 1993).

Species	Status	HRB	Protection	Bern	Corine	IUCN
Gavia arctica	M,W		P	B2	*	
Tachybaptus ruficollis	(B),W		P	B2		
Podiceps nigricollis	M		P	B3		
P. cristatus	B		P	B3		
Phalacrocorax carbo	B			B3	*	
P. pygmaeus	**V**	*	**SP**	**B2**	*	*
Ardea cinerea	B		P	B3		
A. purpurea	B		P	B2	*	
Ardeola ralloides	**M**	*	**SP**	**B2**	*	
Casmerodius albus	**M,W**	*	**SP**	**B2**	*	
Egretta garzetta	**M**	*	**SP**	**B2**	*	
Nycticorax nycticorax	B		P	B2	*	
Ixobrychus minutus	B		P	B2	*	
Botaurus stellaris	(B)		P	B2	*	
Ciconia ciconia	**B**	*	**SP**	**B2**	*	
C. nigra	**B**	*	**SP**	**B2**	*	
Platalea leucorodia	**M**	*	**SP**	**B2**	*	
Cygnus cygnus	V		P	B2	*	
C. olor	B,W		P	B3		
Anser anser	M		P	B3		

Species	Status	HRB	Protection	Bern	Corine	IUCN
A. albifrons	W			B3		
A. fabalis	W			B3		
Branta leucopsis	V		P	B2	*	
Tadorna tadorna	M		P	B2		
Anas platyrhynchos	B			B3		
A. querquedula	(B),M			B3		
A. crecca	M			B3		
A. acuta	M	*	P	B3		
A. penelope	M		P	B3		
A. strepera	B	*	P	B3		
A. clypeata	M		P	B3		
Aythya ferina	M			B3		
A. fuligula	M,W		P	B3		
A. nyroca	(B),M		SP	B3	*	
A. marila	W		P	B3		
Bucephala clangula	W			B3		
Mergus albellus	W		P	B2		
M. merganser	W		P	B3		
Pernis apivorus	**B**	*	**P**	**B2**	*	
Milvus milvus	**V**	*	**SP**	**B2**	*	*
M. migrans	**B**	*	**SP**	**B2**	*	
Accipiter gentilis	B		P	B2		
A. nisus	B		P	B2		
Buteo buteo	B		P	B2		
B. lagopus	W		P	B2		
Hieraetus pennatus	**V**	*	**SP**	**B2**	*	
Aquila pomarina	**(B),M**	*	**SP**	**B2**	*	
Haliaeetus albicilla	**B**	*	**SP**	**B2**	*	*
Circus cyaneus	W		P	B2	*	
C. pygargus	**(B),M**	*	**SP**	**B2**	*	
C. aeruginosus	B		P	B2	*	
Circaëtus gallicus	**M**	*	**SP**	**B2**	*	
Pandion haliaëtus	**M**	*	**SP**	**B2**	*	
Falco cherrug	**B**	*	**SP**	**B2**	*	
F. peregrinus	**M**	*	**SP**	**B2**	*	
F. subbuteo	B		P	B2		
F. columbarius	W		P	B2	*	
F. tinnunculus	B		P	B2		
Perdix perdix	B	*		B3		
Coturnix coturnix	B	*	P	B3		
Phasianus colchicus	B			B3		
Grus grus	**M**	*	**P**	**B2**	*	
Rallus aquaticus	B		P	B3		

Species	Status	HRB	Protection	Bern	Corine	IUCN
Crex crex	**B**	*	**SP**	**B2**	*	*
Porzana parva	B		P	B2	*	
P. porzana	B		P	B2	*	
Gallinula chloropus	B		P	B3		
Fulica atra	B			B3		
Otis tarda	**V**	*	**SP**	**B2**	*	*
Vanellus vanellus	B		P	B3		
Pluvialis squatarola	M		P	B3		
P. apricarius	M		P	B3	*	
Charadrius dubius	B		P	B2		
Numenius arquata	(B),M	*	SP	B3		
Limosa limosa	(B),M		P	B3		
Tringa erythropus	M		P	B3		
T. totanus	M		P	B3		
T. nebularia	M		P	B3		
T. ochropus	M,W		P	B2		
T. glareola	M		P	B2	*	
Actitis hypoleucos	B		P	B2		
Gallinago gallinago	(B),M		P	B3		
G. media	**V**		**SP**	**B2**	*	
Scolopax rusticola	(B),M			B3		
Calidris alpina	M		P	B2		
Philomachus pugnax	M	*	P	B3	*	
Burhinus oedicnemus	**V**	*	**SP**	**B2**	*	
Stercorarius parasiticus	M		P			
Larus canus	M,W		P	B3		
L. cachinnans	M,W					
L. fuscus	M		P			
L. ridibundus	M,W		P	B3		
L. minutus	M		SP	B2		
Chlydonias niger	M		P	B2	*	
Hydroprogne caspia	M		P	B2	*	
Sterna hirundo	(B),M		P	B2	*	
Columba palumbus	B					
Streptopelia turtur	B		P	B3		
S. decaocto	B			B3		
Cuculus canorus	B		P	B3		
Tyto alba	**B**	*	**SP**	**B2**		
Athene noctua	B		SP	B2		
Strix aluco	B		P	B2		
Asio otus	B		P	B2		
A. flammeus	**M**	*	**SP**	**B2**	*	

Species	Status	HRB	Protection	Bern	Corine	IUCN
Caprimulgus europaeus	B		P	B2	*	
Apus apus	M		P	B3		
Alcedo atthis	B,W		P	B2	*	
Merops apiaster	**M**	*	**SP**	**B2**		
Coracias garrulus	**M**	*	**SP**	**B2**	*	
Upupa epops	B		P	B2		
Jynx torquilla	B		P	B2		
Picus viridis	B		P	B2		
P. canus	(B),V		P	B2	*	
Dryocopus martius	**B**	*	**P**	**B2**	*	
Dendrocopos major	B		P	B2		
D. syriacus	B		P	B2		
D. medius	**B**	*	**P**	**B2**	*	
D. minor	B		P	B2		
Galerida cristata	B		P	B3		
Lullula arborea	M		P	B3	*	
Alauda arvensis	B		P	B3		
Hirundo rustica	B		P	B2		
Delichon urbica	B		P	B2		
Riparia riparia	B		P	B2		
Oriolus oriolus	B		P	B2		
Corvus corone	(B),V		P			
C. cornix	B					
C. frugilegus	B					
C. monedula	(B)		P			
Pica pica	B					
Garrulus glandarius	B					
Parus major	B		P	B2		
P. caeruleus	B		P	B2		
P. ater	M,W		P	B2		
P. palustris	B		P	B2		
P. montanus	B		P	B2		
Aegithalos caudatus	B		P	B2		
Remiz pendulinus	B		P	B2		
Panurus biarmicus	(B)		P	B2		
Sitta europaea	B		P	B2		
Certhia familiaris	B		P	B2		
C. brachydactyla	B		P	B2		
Troglodytes troglodytes	B		P	B2		
Turdus viscivorus	M,W		P	B3		
T. pilaris	B		P	B3		
T. philomelos	B		P	B3		
T. iliacus	M		P	B3		

Species	Status	HRB	Protection	Bern	Corine	IUCN
T. merula	B		P	B3		
Oenanthe oenanthe	B		P	B2		
Saxicola torquata	B		P	B2		
S. rubetra	B		P	B2		
Phoenicurus phoenicurus	B		P	B2		
P. ochruros	B		P	B2		
Luscinia megarhynchos	B		P	B2		
L. luscinia	**(B),M**	*	**SP**	**B2**		
L. svecica	**(B),M**	*	**P**	**B2**	*	
Erithacus rubecula	B		P	B2		
Locustella naevia	B		P	B2		
L. fluviatilis	B		P	B2		
L. luscinioides	B		P	B2		
Lusciniola melanopogon	B		P	B2	*	
Acrocephalus arundinaceus	B		P	B2		
A. scirpaceus	B		P	B2		
A. palustris	B		P	B2		
A. schoenobaenus	B		P	B2		
Hippolais icterina	B		P	B2		
H. pallida	B	*	P	B2		
Sylvia atricapilla	B		P	B2		
S. nisoria	B		P	B2	*	
S. borin	B		P	B2		
S. communis	B		P	B2		
S. curruca	B		P	B2		
Phylloscopus trochilus	B,M		P	B2		
P. collybita	B		P	B2		
P. sibilatrix	B,M		P	B2		
Regulus regulus	M,W		P	B2		
Muscicapa striata	B		P	B2		
Ficedula hypoleuca	M		P	B2		
F. albicollis	B		P	B2	*	
Prunella modularis	B		P	B2		
Anthus pratensis	M		P	B2		
A. campestris	B		P	B2	*	
A. trivialis	B		P	B2		
A. spinoletta	W		P	B2		
Motacilla alba	B		P	B2		
M. cinerea	M		P	B2		
M. flava	B		P	B2		
Bombycilla garrulus	W		P	B2		
Lanius excubitor	W		P	B2		
L. minor	**(B),M**	*	**P**	**B2**	*	

Species	Status	HRB	Protection	Bern	Corine	IUCN
L. collurio	B		P	B2	*	
Sturnus vulgaris	B					
Passer domesticus	B					
P. montanus	B			B3		
Coccothraustes coccothraustes	B		P	B2		
Carduelis chloris	B		P	B2		
C. carduelis	B		P	B2		
C. spinus	M,W		P	B2		
C. cannabina	B		P	B2		
C. flammea	M,W		P	B2		
Serinus serinus	B		P	B2		
Pyrrhula pyrrhula	W		P	B3		
Fringilla coelebs	B		P	B3		
F. montifringilla	W		P	B3		
Emberiza citrinella	B		P	B2		
E. schoeniclus	B		P	B2		
Miliaria calandra	B		P	B3		

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